UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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VIA ELECTRONIC MAIL, AND U.S. MAIL

REPLY TO THE ATTENTION OF:

February 5, 2008 SR-6J

Mr. Jerry C. Winslow
Principal Environmental Engineer
Xcel Energy
414 Nicollet Mall (Ren. Sq. 8)
Minneapolis, Minnesota 55401

RE: Required Changes to the Baseline Ecological Risk Assessment (BERA)
Ashland/NSP Lakefront Superfund Site

Dear Mr. Winslow:

This is in response to your letter dated September 24, 2007, in which you discuss the BERA and EPA's decision to amend the Remedial Action Objectives (RAO) Technical Memorandum (Appendix A to the Final Remedial Investigation Report). Several statements in your September 24th letter are either inaccurate or misleading, and I write to clarify the record.

Xcel Energy (NSPW) is conducting the Remedial Investigation and Feasibility Study (RI/FS) for the Ashland Lakefront Superfund Site pursuant to an Administrative Order on Consent (AOC) (V-W-04-C-764). As part of the RI/FS, NSPW is required to complete an RI Report, including a Baseline Ecological Risk Assessment (BERA) Report and a Remedial Action Objective (RAO) Technical Memorandum, which includes a sediment preliminary remediation goal (PRG), based on the conclusions of the BERA. By letter dated April 25, 2007, and pursuant to the AOC, EPA required NSPW to make certain changes to the RAO Technical Memorandum, including a revised PRG. The revised PRG was based on a best professional evaluation of sediment chemistry, bioassay, and benthic community study data collected by SEH and NSPW. The evaluation of the BERA and sediment investigations that form the basis for the revised PRG are detailed in the attachment to EPA's April 25th letter, including the *Technical Memorandum on the Derivation of Sediment Preliminary Remediation Goal (PRG) for the Ashland Lakefront Site* (Technical Memorandum).

The main contention in your September 24th letter appears to be that EPA "concluded that the results of the benthic community study had no value and totally ignored this line of evidence in developing a PRG for Site sediments. Only the sediment chemistry and toxicity data were used as the basis of the sediment PRG." As a result you write that EPA's decision to require NSPW to revise the PRG for the RAO Technical Memorandum was arbitrary and contrary to EPA policy. This simply is not the case.

EPA considered the benthic community studies done at the Site, and used these data along with chemistry and toxicity data in formulating the PRG. After reviewing all of the data, EPA decided that the "highest weight of evidence" should not be placed on any one particular study as NSPW suggested. EPA considered **all** the data (chemistry, toxicity, and benthic) to help determine the PRG.

EPA rejected NSPW's PRG because of a number of problems with the 2005 benthic community study conducted by URS (URS 2005), NSPW's contractor. EPA's Technical Memorandum found "tremendous variability and resultant uncertainty associated with both the site samples and reference samples collected in the URS 2005 ...." The issues associated with the variability and the uncertainty of the sampling sites in the 2005 study are listed on pages 4 and 5 of the Technical Memorandum, and EPA concluded the statistical analysis presented in the BERA did not clearly address these issues. As a result, the 2005 study conducted by URS was found to have "low power" that could underestimate the adverse effect of sediment contamination on the benthic community. The 2005 study also failed to evaluate metrics, such as midge/oligochete ratios and midge taxa richness, that were part of the 1998 study of the benthic community conducted by SEH (SEH 1998), and which appear to be statistically significant. In conclusion, the Technical Memorandum found "the 2005 benthic community study analysis, as presented in the BERA documentation, provides little value in supplementing the 1998 study and it does not lend value to current discussions of PRGs." The URS 2005 study, therefore, was not "totally ignored", but was carefully considered and found to be insufficient for purposes of establishing the PRG.

The 2005 URS study was conducted to supplement the SEH study presented in the 1998 BERA. In addition, a supplemental BERA of the contaminated sediments was performed in 2001 (SEH 2002), during which additional sediment toxicity testing was conducted to evaluate adverse effects to ecological receptors. (*See* Section 3.3.2 of the Final RI/FS Work Plan for a discussion of these previous investigations) The Technical Memorandum looked "at all of the data collected over the three iterations of sediment investigations, and following the sediment quality 'triad' approach derive[d] a range of concentrations of PAHs that would be expected to affect the benthic macroinvertebrate community." The Technical Memorandum evaluated the sediment chemistry, site-specific toxicity tests, and benthic community studies. The Technical Memorandum evaluated a range of PRGs with the overall goal of the survival, growth, and reproduction of the benthic community. The PRGs evaluated in the Technical Memorandum were derived from data collected through all iterations of sediment investigation at the Site and EPA's review of all data collected. From the range of PRGs, a single PRG was selected for inclusion in the RAO Technical Memorandum to complete the Feasibility Study pursuant to the Administrative Order by Consent.

The Technical Memorandum found that the sediment chemistry and toxicity data in the NSPW BERA supports both the 1998 and 2002 SEH BERA data, and that 2005 URS benthic community study should not be given the "high weight of evidence" that NSPW gave it because it is not supported by EPA guidance or the community study data which was intended to supplement the 1998 study. As discussed in the Technical

Memorandum, there were numerous (10) issues associated with the variability and the uncertainty of the 2005 sampling sites used in the statistical evaluation. Based on all of the issues, EPA concluded that the statistical analysis of the 2005 community data is questionable and should not be giving the "highest weight of evidence" that NSPW placed on the benthic community study. The Technical Memorandum looked at all the data collected over the three iterations of sediment investigations (not just the 2005 data), and following the sediment quality "triad" approach derived a range of concentrations of PAHs that would be expected to affect the benthic community.

In your September 24th letter, you contend that EPA "failed to rebut, discuss, or, in fact, even acknowledge NSPW's response in any subsequent meeting or discussion despite several NSPW requests to discuss the benthic community study." At the same time you state there was "a considerable technical dialogue between NSPW's consultants and EPA technical experts concerning the sediment bioassay study ...." EPA recalls that the only time that NSPW requested a discussion on the benthic community study was 3 months after we submitted the Technical Memorandum on the Derivation of the PRG. EPA recalls that most of our discussions were about getting a PRG so that we could move forward on the RI. There were a number of technical discussions (questions) from the EPA technical people regarding the sediment bioassay study but we only had a couple discussions regarding the benthic study and it was mainly discussions on how much "weight of evidence" should be placed on the 2005 benthic study. As EPA can recall, early in the review, EPA stated to NSPW that the 2005 study would have a "low weight of evidence" due to concerns with the data.

We basically had a fundamental disagreement on how the data should be used to determine the PRG. NSPW believed that the "highest weight of evidence" should be placed on one study to help determine the PRG. EPA did not agree with that philosophy on this Site. The PRG produced in the EPA Technical Memorandum was derived from data collected through all iterations of sediment investigation at the Site and is based on EPA review of all data collected.

The letter contends that "EPA arbitrarily dismisse[d] the entire benthic community study on the tenuous and unsupportable grounds that the reference stations were inappropriate ..." contrary to "USEPA guidance (cf USEPA 2000) and the scientific method." EPA did not arbitrarily dismiss the benthic study. The reference stations were found to be unreliable because of the variability and uncertainty of the 2005 sampling sites used in the statistical evaluation of the benthic community impacts. As stated in the Technical Memorandum, the issues with the sampling sites included:

- The range of TPAH concentrations for SQT1 replicate samples overlapped the range of TPAH concentrations of most other SQT replicate samples;

- The standard deviation of the dataset exceeds the mean values for TPAH concentrations for replicate samples SQT1, SQT7, SQT8 and reference wood site SQT11;

- The standard deviation of the dataset exceeds the mean value for TOC concentration for reference wood site SQT9;

- The percentage of fine sands is higher in 80% of the reference samples than in 100% of site samples;

- The percentage of fines + fine sands is higher in 80% of the reference samples than in 75% of the site samples;

- The reference sand sites SQT10 and SQT12 exhibited "a strong odor of decaying organic matter" and "elevated levels of ammonia";

- The reference sand sites SQT10 and SQT12 exhibited <50% survival for *Hyalella azteca* 28 day sediment exposure toxicity test;

- The reference wood site SQT11 had no survival in several replicates of the *Lumbriculus* bioaccumulation study;

- The reference sand sites SQT13 and SQT 14 were collected in Fall 2005 versus Spring 2005, more than 3 months after the initial sample collection. Use of this data is questionable for comparison of population metrics due to expected seasonal variation in larval and emergent species; and

- Only three site locations appear to be "sand" sites, and none of the reference sand sites appear to be appropriate. Thus, the sample size for sand sediments does not appear meet the power requirements outlined in the RI/FS workplan.

Thus if a study encounters a large degree of variability such that discriminatory power is greatly decreased, then the strength of the benthic community study as a line of evidence is decreased commensurately. Based on the issues listed above, EPA determined that there was variability and resultant uncertainty associated with both the site samples and reference samples collected in the URS 2005 benthic macroinvertebrate community investigation. Therefore, EPA placed a "low weight of evidence" on the 2005 study.

Finally, EPA's decision not to give the 2005 URS benthic community study a "high weight of evidence" does not fly in the face of scientific consensus because according to EPA guidance, "the information on benthic community structure cannot be used alone to evaluate the cause of any impacts observed."

In summary, EPA made the determination after careful and thorough review of all data collected, as evidenced by the Technical Memorandum, that the 2005 URS benthic community study should not be given the highest weight of evidence. Instead, following the sediment quality triad approach, EPA evaluated sediment chemistry, site-specific toxicity tests, and site-specific community studies to determine the PRG which will be used to complete the Feasibility Study. As stated in the Technical Memorandum, "[t]he accumulated data for sediment chemistry, bioassay toxicity tests, and benthic

macroinvertebrate community studies at this site continue to indicate that it is reasonable to conclude ecological impact is highly likely and contaminant-induced degradation of sediment-dwelling organisms is evident."

Sincerely,

Scott K. Hansen
Remedial Project Manager

cc: Jamie Dunn, WDNR
Dave Trainor, Newfields
Ervin Soulier, Bad River Band of the Lake Superior Chippewa
Melonee Montano, Red Cliffe Band of the Lake Superior Chippewa